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THE NATURE OF CAPITAL AND INCOME

The work before us [1] notably strengthens the forces making for the new conception of capital. Professor Fisher here renders a threefold service. He demonstrates mathematically the inconsistency of the old classification and conception of factors and incomes; he shows the mathematical consistency of the value concept of capital and of the capitalization theory of interest; and he illustrates by actuarial methods the application of the new conceptions to business problems. All three of these proofs have been offered before in verbal form, and the results are already accepted by a number of American economists. But it is always possible to miss the point more easily in a verbal argument, especially when it involves the rejection of familiar conceptions. The argument at a number of points is here restated fully, clearly, and conclusively. The peculiar endowment and training of Professor Fisher as both mathematician and economist made him uniquely capable of this notable performance in economic exposition.

The chief topics and the order in which they are treated are as follows: The introduction treats of the nature of wealth, of property, and of utility. Part one deals with the nature of capital, of capital accounts in private and corporate business, and of various correct and incorrect methods of summing up capital, as revealed in a study of the principles of accountancy.

[1] *The Nature of Capital and Income,* by Irving Fisher, Ph.D., Professor of Political Economy, Yale University. Pp. xxi+427. New York: The Macmillan Co., 1906.

Part two deals with income in the usual concrete form of commodities and money, applies the methods of accountancy to the estimation and summation of incomes, and concludes with the discussion of psychic income as the final or true form of which all others are but reflections. Part three approaches the central theme of the book, the ratios between capital and income: here are treated the interest rate, capitalization, and various accountancy questions involving the distinction between capital and income. Summaries of the last part and of the whole work conclude the text which is followed by appendices, aggregating seventy pages, mostly on the mathematical formulae and methods of expressing capital and income. Many parts of the text also are illustrated with diagrams and mathematical examples. Such a brief list of topics gives no adequate idea of the methods and style of treatment. For these, as well as for substance of doctrine, many of the chapters merit and must receive careful reading by economic students.

Agreeing so fully with the general doctrines defended by Professor Fisher in opposition to the conventional conceptions, the reviewer deems it unneedful to attempt here a mere epitome of the various arguments. Nor would it be profitable to dissipate the discussion over a score or more of minor questions where the author may be in error. It seems best in the cause of economic science however, to call attention to some doubtful conclusions, and, as a help to the interpretation of this work, to indicate how Professor Fisher's views have developed since his first essays in this subject ten years ago. These comments conveniently group themselves about the three parts of the text: (1) the nature of capital, (2) the nature of income, (3) the relation of capital and income, with a conclusion (4) on the relation of Fisher's doctrines to contemporary speculation.

The nature of capital.—Professor Fisher sees the essence of his contribution to the theory of capital in the distinction between a fund and a flow, "the most important application" of which "is to differentiate between capital and income." [2] He gives this definition:

[2] *The Nature of Capital and Income*, p. 52.

Capital is a fund and income a flow. This difference between capital and income, is, however, not the only one. There is another important difference, namely, that capital is *wealth,* and income is the *service* of wealth. We have therefore the following definitions: A *stock of wealth* existing at an *instant* of time is called *capital.* A *flow of services* through a *period* of time is called *income.*[3]

Thereafter he refers not to one but to two fundamental distinctions between capital and income, those "between fund and flow, and between wealth and services."[4] Here without comment or footnote, is introduced into the definitions of capital and income which he had presented ten years before a radically new element, and one denoting the abandonment of the former thought. His original view is indicated in the following quotations:

All wealth presents a double aspect in reference to *time.* It forms a *stock* of wealth, and it forms a *flow* of wealth. The former is, I venture to maintain, capital, the latter, income and outgo, production and consumption.[5]

The total capital in a community at any particular instant consists of all commodities of whatever sort and condition in existence in that community at that instant, and is antithetical to the streams of production, consumption and exchange of *these very same commodities.*[6]

These [older] definitions . . . . assume that capital is one sort of wealth and income another. . . . . Economists have thought of capital and income as different kinds of commodities instead of different aspects of commodity in time.[7]

Endeavoring to account for the fact that Marshall did not apply this antithesis of fund and flow to capital and income, Fisher says:

Possibly the reason why this step was not taken lies in the fact that Marshall conceives of income as a flow of pleasure rather than of goods. He conceives of capital as antithetical to the enjoyable income which it brings in. But the simpler antithesis is not between a stock of goods and the particular flow which it may earn or purchase, but between the stock and the flow of goods of the *same* kind.[8]

[3] *Op. cit.,* p. 52. The italics in all the quotations in this review follow exactly the original texts.

[4] *Op. cit.,* pp. 58, 324, *et passim.*

[5] "What is Capital?" *Economic Journal,* Vol. VI (1896), p. 514.

[6] *Ibid.,* p. 514. [7] *Ibid.,* p. 516. [8] *Ibid.,* p. 527.

Marshall . . . . allowed the notion to survive that capital is one species of wealth and income another.[9]

In criticizing an expression of Edwin Cannan's Fisher expresses what in his view is the error in it:

the omission of the explicit statement that income and capital consist of the self-same goods.[10]

Speaking of the distinction between capital and income, Fisher rejects again

the old and harmful notion . . . . that this distinction implies some difference in the kind of goods concerned.[11]

At the beginning of the second article he reiterates the view that the sole distinction between capital and income is that between fund and flow.

A full view of capital would be afforded by an instantaneous photograph of wealth.[12]

The reviewer pointed out some years ago[13] the impossibility of this view, saying:

this conception shares what I believe to be an error common with it to both of the others [Clark's and Bohm-Bawerk's] in that it makes the income of a community consist of "streams . . . . of the very same commodities that compose the original capital." There are many things that are a part of Fisher's capital only and never are a part of the flow of income. Income differs from wealth not merely as an aspect but in the group of goods which compose it.

In the book one may search in vain for the idea that wealth and income consist of goods of the same kind. It has been without comment abandoned and therewith has been taken away the very *raison d'être* of the contrast between fund and flow. The original concept was unsound, the new idea is the all important one.

[9] *Loc. cit.*, p. 528. [10] *Ibid.*, p. 533. [11] *Ibid.*, p. 534.

[12] *Ibid.*, Vol. VII, p. 199. So desirous was the author to emphasize the idea of stock as the essense of the capital concept, that he framed a definition doubly tautological: "stock of wealth existing at an instant of time." In any applicable sense of the word stock, the stock of wealth must be both existing and at an instant of time. "Stock of wealth" tells it all.

[13] *Quarterly Journal of Economics*, Vol. XV (1900), p. 19.

Let us look more closely at the origin and defects of the original concept. The only applicable definitions of stock that are found in the two authorities at hand are as follows: *The Standard Dictionary* definition (6): "any accumulated store or reserved supply that may be drawn on at will;" (7) "material accumulated or ready for employment." *The Century Dictionary,* definition (18) reads: "hoard or accumulation; store; supply; fund which may be drawn upon as occasion demands." These meanings accord fairly well with the thought of fund and flow of the same things, but accord ill with a stock of wealth and a flow of services. The stock of wealth of concrete goods is not an accumulation of services nor of incomes to be drawn upon as occasion demands, or a supply that may be drawn on at will.

Is it not possible for the reader to make a shrewd guess as to one or two of the causes leading to the error in Fisher's original definition? The first is, that he apparently identifies two very different propositions. He is contending for a conception of capital that includes all existing wealth and not merely produced productive agents. The proposition that "capital is not any particular kind of wealth, but a stock of wealth of any kind existing at an instant of time," he deems equivalent to the proposition that capital is a fund and income a flow. So long as he held the idea that income consisted of the same things as capital, it was easy to identify the two thoughts. When later the idea of sameness of substance was given up, the definition was retained.

Another contributory cause of this error may be better understood after the discussion of income and of ratios, but may be referred to now. Fisher began his study of capital [14] with his attention fixed upon the relations between the inflow and outflow of concrete goods. Not until the third article [15] do other relations take a prominent part. All his illustrations in the first two articles apply to the conception of stocks and flows of the same goods (not incomes at all, as he later comes to see). Some examples will make this clear:

[14] Three articles in *Economic Journal,* Vols. VI and VII (1896 and 1897).

[15] *Ibid.,* Vol. VII, p. 511.

> Stock relates to a *point* of time, flow to a *stretch* of time. Food in the pantry at any instant is capital, the monthly flow of food through the pantry is income.[16]
>
> Commodities of which a large stock exists are usually commodities whose flow is not conspicuous, while in those where the flow is large, the stock in turn is insignificant. Factories, ships and railways illustrate the first class; food, drink, fuel, illuminants, the second. The former are therefore set down as capital and the latter as income.[17]
>
> The stock of carpets in a store is not so closely associated with the flow of interest paid by the merchants in maintaining this stock, or of the profits earned by its use, as it is with the flow of *carpets* into and out of the store. The distinction between a stock and a flow of the same kind of goods is prior to that between a stock of one kind and a flow of another.[18]

Other examples implying the same view are found in the contrast of rivers and lakes where in fact the water is the same, and of which Fisher says that behind the "arbitrary classification lies the real scientific distinction between 'gallons' and 'gallons per second.' "[19] In another illustration of the case of money loans, the language used is: "the sum lent being a stock and the succession of interest payments constituting a flow." Speaking of the wage fund, he says that it should have been looked upon as a flow dependent

> not upon the magnitude of the fund, but upon the rate at which it is replenished. This rate is not a fund at all, but a flow; it bears the same relation to a fund that a flow of so many gallons per hour does to a reservoir holding so many gallons of water.[20]

At a later point, Fisher seems unconsciously criticizing his own doctrine when he says:

> in [most theories of income] the annual supply or consumption of food and clothing, not their use, is regarded as income. That is, income is conceived as a flow of the first of three kinds distinguished in this article instead of one of the third.[21]

This is in the last article in which he has come to look upon services as the only thing deserving the name of income.

Thus in the first article Fisher forms his peculiar concept of capital and frames a definition to fit a case which later analysis

[16] *Op. cit.*, Vol. VI, p. 514.

[17] *Ibid.*, p. 516.

[18] *Ibid.*, Vol. VI, p. 527.

[19] *Ibid.*, p. 516.

[20] *Ibid.*, p. 526.

[21] *Ibid.*, Vol. VII, p. 530.

compels him to relegate to a non-fundamental place in his theory. Beginning by emphasizing as essential the sameness, he ends by emphasizing the contrast, of the things composing capital and income.

> The instant we include any such concrete wealth under the head of income, that instant we begin to confuse capital and income.[22]

The misleading phrase "fund and flow" must be looked upon as a historical accident and one unsuited to the better capital concept which Professor Fisher has now adopted.

Another difficulty that will be more clearly seen later in this review is that the earlier concept applied to stocks or sums not expressed in terms of value. The reviewer has, on a previous occasion, directed a criticism to this point.[23] In the first of the earlier articles, Fisher objected to Clark's definition of value on the ground that he tried to include different sorts of capital under the same fund, reduced to a common equivalent in terms of value. He added: "the objection is not that the summation of value is inadmissible, but that it is a secondary operation." [24] The whole implication is not clear but this much is, that in Fisher's opinion the value summation is no essential part of the capital concept, and that a summation of concrete objects by inventory or by description of physical qualities, not only is a capital sum, but that it is the primary and essential capital sum. In the second article,[25] value of wealth and value of property are admitted as two of the senses of capital, but stocks of wealth and of property as quantities (inventory and description without valuation) are given the titles of capital-wealth and capital-property. In the book these terms are retained but as hardly more than formalities, for nearly the whole attention is given to the value concept of capital. Fisher's own treatment becomes subject to his own former criticism directed against another, for he includes "different sorts of capital in the same

[22] *The Nature of Capital and Income,* p. 106.

[23] See *Quarterly Journal of Economics,* Vol. XV, p. 19. Further comment on Fisher's present use of the value relation is found below, p. 143.

[24] *Economic Journal,* Vol. VI, p. 530.

[25] *Ibid.,* Vol. VII, p. 199.

fund, reduced to a common equivalent in terms of value." Capital is still thought of as the "flash-light picture" of incomes,[26] but it is said to be

> heterogeneous; it cannot be expressed in a single sum. We can inventory the separate columns, but we cannot add them together. They may, however, be reduced to a homogeneous mass by considering not their kinds and quantities, but their values. And this value of any stock of wealth is also called capital. . . . . Unless it is otherwise specified, the term capital will be understood in this sense.

This brings the treatment pretty nearly in harmony with the criticism to the effect that "the total quantity of many different kinds of goods cannot be expressed for economic purposes in a single sum, except in terms of value.[27] That this is a good and necessary change is unquestioned, but that it shifts Fisher's concept from its original basis is no less certain.

The nature of income.—Fisher's income concept has undergone a change no less radical and beneficial than has his capital concept. Three stages can be pretty clearly distinguished. First, income is conceived of as the flow of the same concrete commodities which make up the fund of wealth, as seen in the examples given above. "The monthly flow of food through the pantry is income."[28] It is because he thus thinks of wealth as "used both for capital and income"[29] that Fisher framed his concept as he did. He criticized Marshall for conceiving of "income as a flow of pleasure rather than of goods." Quite as strongly he criticized Cannan:

> Like Marshall, Cannan seems to conceive of income as a flow of *pleasure,* but capital as a stock of *things;* and thus, in spite of the clear statement of the time distinction between them, this distinction is not regarded as fully adequate, and there persists a trace of some additional distinction between the substances of which capital and income are composed.[30]

No hint of any other view appears in the first article.

[26] *Nature of Capital and Income,* p. 66.

[27] Recent Discussion of the Capital Concept," *Quarterly Journal of Economics,* Vol. XV, p. 19.

[28] *Economic Journal,* Vol. VI, p. 514.

[29] *Ibid.,* p. 532.

[30] *Ibid.,* p. 534.

In the second article in distinguishing between wealth and property, a different thought is suggested of the services of wealth, i. e., the desirable events it occasions. A footnote refers to several writers who have discussed this subject. The thought lies near that these services are the income of the wealth; but no statement to that effect is made. Near the end of the third article, these services suddenly are presented, not only as income, but as the only income. The last problem treated in the article, that "of income and its distribution,"[31] begins:

> In some respects, the third group of relations, those between stocks of wealth and the flow of services they render is the most important and fundamental of all. . . . . The value of the services we shall call the income from the wealth. . . . . Textbooks now usually point out that a "part" of income consists of services of man and uses of durable wealth. I propose to go a step further and show that *all* income consists of services.[32]

The services cease in this view to be tangible things of the nature of wealth.

> Every article of wealth is to be pictured as simply the tangible and visible handle to hold fast invisible streamers or filaments of services reaching into the future.[33]

In the book this is in the main the notion of income presented:

> The only true method, in our view, is to regard uniformly as income the service of a dwelling to its owner (shelter, money or rental).[34]

The belief is implied that this sum of money-rentals and enjoyable services is a homogeneous income because it all consists of services to the owner.[35] This is a complex of contractual money incomes and economic services of goods to men. This summation of heterogeneous elements, direct services from goods and money payments by men in exchange for services of goods, is not a satisfactory solution of the problem, but it is "the solution offered in the present book" as a homogeneous expression of the real income concept.[36]

[31] *Ibid.*, Vol. VII, pp. 512, 522.

[32] *Ibid.*, p. 526.

[33] *Ibid.*, p. 526.

[34] *Nature of Capital and Income*, p. 106.

[35] *Ibid.*, pp. 105, 106, 112.

[36] *Ibid.*, pp. 105, 112. In a later summary of enjoyable objective services the money income is not named (p. 165), and it is recognized as a different method of reckoning, apparently in conflict with the former view (p. 107).

Fisher is not satisfied with this himself, and in the third stage of his concept he is led to the "psychic stream of events as final income." [37] The income of enjoyable objective services leads up to subjective satisfactions. He says: "it is usually recognized by economists that we must not stop at the stage of this objective income. There is one more step before the process is complete." He then dennes subjective income "as the stream of consciousness of any human being," [38] or "simply one's whole conscious life." [39] Does this not go a bit too far in the widening of the concept, and ought it not to be limited to certain of the states of consciousness, making the definition run somewhat as follows: "the pleasurable psychic impressions which objective goods aid to produce"? [40] Fisher implies this limitation in saying later that to evaluate this income "it is only necessary for the individual to answer the question what money is he willing to pay for any enjoyment brought about by means of external wealth." [41] The chapter has many just observations on the subjective items which "are by no means to be despised by the economist, who has far too long busied himself with a study of the superficial objective phenomena." [42] The thought, however, is far removed from that of an income of concrete wealth, indeed the original idea has quite disappeared.

Fisher ends his formal analysis by enumerating three kinds of income, subjective, objective services, and money.[43] It is true, as Fisher says, that "we are at liberty to consider any one of them as income in its proper place," but there is still danger of confusion, and he does not escape it. The argument that the process of exchange cannot contribute anything to the total

[37] *Op. cit.*, p. 177. This is the view that was rejected by Fisher in the articles; see above, p. 136.

[38] *Ibid.*, p. 168.

[39] It is very questionable whether this is "usually" recognized. Only one reference in support of the statement is given in the footnote p. 165, and that one is to the reviewer's text which cites few precedents for the view.

[40] Fetter, *The Principles of Economics*, p. 43 (1904).

[41] *Nature of Capital and Income*, p. 177.

[42] *Ibid.*, p. 176.

[43] *Ibid.*, p. 177.

income of society becomes involved in ambiguities. The sale of a book occasions "an element of income to the seller and an element of outgo to the purchaser." [44] And it is said that the book yields no income until the reader peruses it. This evidently confuses mere accounting in terms of money with psychic income. In the same vein it is said that "book selling adds nothing to the income of society, but the reading of the book does." The error of this appears when we consider that, using words in the same sense, labor however productive, wealth however well directed toward increasing the fitness of goods to gratify wants, would add nothing to income; the final act of consumption alone would add to the income of society!

A number of other passages present difficulties of the same kind. It is especially hard to tell what is the real or the "realized income" under discussion. At times it is purely "psychic satisfactions;" [45] again it seems to mean money income actually secured; [46] again money expenditure, even when largely made by using up invested capital.[47]

This same shifting meaning of income possibly accounts for the origin of Fisher's doctrine that increase of capital value is not income.[48] The doctrine in brief is that the increase of capital as it grows in value, as for example between two interest payments, is not income when both capital and increase are reckoned in terms of money. If a forest, worth $20,000 ten years ago, is now worth $32,000, the increment of $12,000 may be counted as capital but not as income during that period.[49] Fisher would not speak of income until the wood is cut and sold, and insists upon the distinction "between income that is realized by the investor and income which is earned by the capital." [50] This implies some idea of a kind of income that does not come to any person. He goes on:

Realized income is the value of the actual services secured from the

[44] *Ibid.*, p. 149. [45] *Ibid.*, p. 326. [46] *Ibid.*, p. 232.

[47] Chap. xiv, *passim*, especially p. 250.

[48] It first appeared in criticizing Edwin Cannan, *Economic Journal*, Vol. VII, p. 532.

[49] *Op. cit.*, p. 232. [50] *Ibid.*, p. 234.

capital; earned income is found by adding to realized income the increase of capital value, or deducting from it the decrease.[51] Expressed in a single sentence, the general principle connecting realized and earned income is that they differ by the appreciation or depreciation of capital.[52]

It is venturesome to question mathematical examples when presented by Professor Fisher, but these seem quite misleading. He says the truth of the doctrine "is evident from the fact that this item is never discounted in making up capital value."[53] This example follows:

> Suppose, for instance, with interest at 4 per cent., that a man buys an annuity of $4 a year, which does not begin at once but is deferred one year. Since this annuity will be worth $100 one year hence, its present value will be about $96, which, during the ensuing year, will gradually increase to $100. If this increase of value of (about) $4 is itself to be called income, it should be discounted. But this is absurd. The discounted value of $4 would be $3.85, which, if added to the $96, would require $99.85, or practically the same as a year later instead of $4 less as is actually the case. In other words, the hypothesis which counts an increase of value as income is self-destructive; for if the increment *is* income, it must be discounted, but, if discounted, it is practically abolished.

It would indeed be absurd to discount the income a second time and add it to the capital value, for it has already been discounted and added to the capital sum. If it had not been, the capital sum would be the discounted value of an annuity to begin two years hence, which would be about $3.85 less than $96. And so every successive annuity has been included to arrive at the capital sum. Of course it would be an error to count it first as increase of capital and then as an additional sum of income the moment it becomes payable. But take away this increase of the capital value during the year and you take away the income, which is nothing but the increment in capital value detached at certain conventional points and put at the disposal of the owner.

Does not the thought shift in this example from the stage of money income to the stage of enjoyable income? Yet Fisher is discussing money income and deems the income to be realized whenever the money is paid to the owner of the capital. In the merely monetary aspect of the question, there is as yet no

[51] *Op. cit.*, p. 234. [52] *Ibid.*, p. 238. [53] *Ibid.*, p. 248.

enjoyment, but in a developed money market the capital value of the annuity would be salable any day for a sum including the accrued income. On the other hand, the annuity at the expiration of the year may be money income not expended for gratifications, but reinvested in other future incomes. The increment of money income in any elapsed year is therefore the primary fact, and increase of capital occurs only on condition that the accrued money income is not withdrawn but is added by reinvestment, or is saved.

The same difficult doctrine is set forth in an elaborate illustration in which three brothers are supposed to be subjected to an income tax. Each supposedly inheriting $10,000, the first invests the sum in a perpetual annuity of $500; the second puts his in trust to be invested in an annuity of $1,000 after fourteen years when the capital has doubled; the third, a spendthrift, buys an annuity of nearly $2,000 for six years.[54] In Fisher's view, the $500, the $1,000 and the $2,000 are the true realized incomes, which alone should be taxed under income taxation. The second brother should be taxed on nothing until after fourteen years, as until then he would be spending nothing, and the third brother would be taxed during his brief spendthrift career on an income of $2,000, the amount he is spending. The argument is substantially that a tax on expenditures is more equitable and expedient than either a tax on the annual net increase of capital in the owner's hands (the usual ideal of an income tax), or a tax on capital value (the general property tax). The general argument as to the virtues of consumption taxes is frequently made, but if true it hardly supports the proposition Fisher is advancing. There is no pretense that the ordinary income tax is a consumption tax; it is frankly, however crudely, a tax on net earnings which are at the disposition of the taxpayer either to save or to spend without encroaching upon his other capital. Where, therefore, is the fallacy to which reference is made?[55] There is no pretense that the general property tax is a consumption tax; its ideal is frankly the taxation of all property rights in proportion to their present capitalized value.

[54] *Ibid.*, p. 249.

[55] *Ibid.*, p. 253.

The double taxation and injustice too frequently found in its practice is caused by bad administration and by bad reasoning of quite a different nature.

In this illustration "true realized income" is used in the sense of the amount of money expended for enjoyment, whether it is taken from the current earnings of capital or from the original capital sum invested. According to this usage income is never money coming in but always money going out. Income is not an addition but always a subtraction. The confusion between money income and subjective income could not be more evident.

No more convincing are the other illustrations. In the case of the vacant land rising in value,[56] it is not necessary to wait until the land is built on and enjoyed, for it is money income that is to be calculated and that is realized in every resale of the land. Is this not a "proper place" at which money income can logically be estimated? According to the view taken[57] the exemption from taxation of forests in Europe, cited as a "more rational system" due to longer experience and to a recognition that the growing forest should not be treated as income, is not, it is safe to say, based upon the reason assigned by Fisher. It is simply a social expedient, a conscious subsidizing of forestry, because forests more than most other wealth in the hands of individuals confer broad social benefits upon others than the owner.

Another minor point in this connection. The treatment of money income is out of harmony with the conception and definition of income as a flow. Capital is repeatedly spoken of as "for the present yielding no income;"[58] there are long periods "during which no income is realized;"[59] in annual contractual payments of interest or annuities, it is said that "during the entire year up to the very end there is no income at all."[60] Income thus is treated not as a flow but as a number of sums of money due at definite though perhaps very irregularly distributed points of time.

The relations between capital and income.—Coming to the examination in detail of the relations between capital and income,

[56] *Op. cit.*, p. 230.

[57] *Ibid.*, p. 177.

[58] *Ibid.*, p. 230.

[59] *Ibid.*, p. 232.

[60] *Ibid.*, p. 235.

Fisher presents "the four income-capital ratios," capital being called a stock of wealth or of property and being expressed either in physical terms or in value.[61] These four "ratios" are: (1) physical productivity, (2) value productivity, (3) physical return, (4) value return. "The ratio of the quantity of services per unit of time to the quantity of capital which yields those services may be called physical productivity." These quantities are expressed physically as acres, as bushels, not as values. The first difficulty here is that a large part of the services yielded by goods is not physical, and in such cases and in so far there is not physical productivity. The examples chance to be chosen where there is some (wheat from acres, cloth from looms). But the second difficulty is that it is not possible to ascribe to a particular piece of "capital" in a physical sense the whole product which is at the same time and in the same sense the product of labor and of other pieces of "capital," such as the building, the land, etc. This physical productivity is not a measurable thing which can be compared with the physical pieces of "capital." [62] Not until value has been imputed to it can it be so compared, and that is the fourth ratio.

These objections do not apply to the third ratio called "physical return" (bushels per $100 of capital applied), for here it is not the whole product but the part imputed by marginal measurement that seems to be considered. The second ratio is the "value productivity" (dollars rent per acre or per dwelling, and wages per laborer). The fatal objection lies to all three of these so-called ratios that they are not ratios. With some diffidence the point must be raised that *ratio* in mathematics implies the relation between two numbers or magnitudes of the same kind. There may be a "rate" described as dollars per acre per year, but not a "ratio," for that must be a numerical relation between two quantities of similar dimensions. No wonder that after only three pages of formal definitions this statement is made: "in this book we are concerned chiefly with the fourth

[61] *Ibid.*, p. 184.

[62] In these cases the word "wealth" would be more fitting than the word "capital."

relation, value return, or the ratio of the value of income to the value of capital."[63] Most of what has preceded and all of what follows pertains to this value ratio, which is the essential feature of the capital concept, though a different idea is embodied in Fisher's definition, as has been indicated above. The author as he proceeds comes to recognize that no other subject is engaging his attention. At the conclusion of the part on the relations between capital and income, he says: "we have finished our study of the relations between capital-value and income-value."[64] "Our special theme has been the value return—the relations between income-value and capital-value."[65] Still more significant is the last page but one of the text.

> It is to the relation between capital and income in the value sense that our attention throughout this book has been chiefly devoted. It has been noted that the relation between capital and income, taken in the value sense, is profoundly different from the relation between capital and income when either or both are measured in their various individual units. When capital and value are measured as "quantities," capital may be said to produce income; but when they are measured in "values," we find that it is necessary to reverse this statement, and to say that income produces capital.[66]

In this it appears that the rejected stone has become the headstone of the corner. This *profound difference* between capital and wealth comes very near being recognized as the essence of the capital concept. But the thought halts short of the inevitable conclusion that the wealth aspect of value is to be found in the production of incomes, whereas the essential capital aspect is the evaluation of incomes and the expression of their present worth. Fisher early committed himself to a conception of capital that has dimmed this distinction, from which conception criticism has as yet only partially freed him.

Relation to contemporary speculation.—With these exceptions this work presents the modern capitalization theory with an invigorating air of practicality. There is no worship of the old fetiches, such as artificially produced or as hypothetically unimproved agents. There is no illusion that the income of land

[63] *Op. cit.*, p. 188. [64] *Ibid.*, p. 303. [65] *Ibid.*, p. 303.

[66] *Ibid.*, p. 327. See also above, p. 135, where is shown Fisher's change from this earlier thought to the value concept.

bears a peculiar relation to price, or that the influence of time upon value is limited to some classes of produced agents. Capital is treated as the present worth of expected incomes, and the essence of the capital problem is found in the value relations between incomes and capital sums. Professor Fisher here shows that this problem has now, by the aid of the new value concept of capital, been brought within the range of logical and mathematical treatment and of the usages of business. As Professor Fisher's suggestive articles ten years ago helped to attract attention to this subject and to present the issues involved, so this riper and weightier contribution will help to tip finally the scales of judgment. A book not appealing directly to a large audience, it will be carefully read by the critical few, and its influence will spread with the new conception of distribution to ever-widening circles of thought.

Every author draws his inspiration from sources of which he is rarely quite conscious. Fisher's mathematical interest led him to ascribe to the mathematician Simon Newcomb the paternity of his original conception of capital and income as fund and flow of the same goods, although his account of the influence shows that it was only a phrase caught from a quite different connection, and that it was not intended by Newcomb to have attached to it the thought that Fisher gave it.

> Newcomb applied his distinction only to problems of monetary circulation. . . . . Intent on elucidating questions of monetary circulation, Newcomb failed to see that the same conception would clear up questions of capital. . . . . The fact that the author of the distinction between stock and flow did not apply it to capital, and the fact that also Professor Marshall, who was quick to see the importance of Newcomb's distinction, did not so apply it, have often caused serious doubts in my own mind as to the propriety of that application.[67]

There was indeed occasion for serious doubt. Fisher did not note that because Newcomb's use of it was confined to monetary problems the funds and flows were expressible in homogeneous units of value, whereas Fisher extended the thought to heterogeneous masses of agents and their incomes, even when

[67] *Economic Journal,* Vol. VI, p. 526.

not expressible in value units, and insisted that the concept of capital be not limited to funds expressed or measured in terms of value. All the development of the concept since has been away from Fisher's original idea toward a conception derived from other sources.

So quickly have the sounder and tested fruits of the studies of Patten and Clark been appropriated, so thoroughly have they become a part of our thought, that they now seem simple truths. Many remember the stimulus they found in Patten's analysis of the ideals, tastes, and economic nature of man. How revolutionary was the thought that life, aspirations, and effort were the center of economic study rather than acres, clay, and iron. Under the influence of a theory of consumption, economics has changed from a study of the physical sources of wealth to a psychological science. The novel of yesterday has become the commonplace of today.

A score of years ago Clark reopened the question of the capital concept by challenging the usual classification of capital and land, of rent and interest. His thought so traversed the conventional definitions and conceptions that for years it found few disciples, yet its fault was rather that it changed the old view too little than too much. Slowly the new thought became familiar as it was presented in its different aspects; the difficulties of the older view became more evident; while here and there the new idea bore fruit in comment or critical essay that clarified details or showed new applications to practical problems.

Among such essays showing the awakened interest in the concept of capital must be classed the articles from Professor Fisher's hands ten years ago. The present work is an evidence of the growing part now played in economic theory by the psychological analysis and of the development that the capital concept has undergone of late. Fisher's present views are in some regards the logical outcome of the recent psychological studies in economics, and in other regards, of the Clarkian protest against the old classification of economic factors. The relation to the latter is probably more close and direct than Fisher has recognized.

However it may be as to the particular influences, Fisher in

his later thinking has probably been more affected by the spirit of his times than his citation of authorities would indicate. Outlining his conceptions of capital and income with little conscious reliance upon contemporary speculation, and guided largely by a mathematical analogy, he has been forced as he developed the thought to take account more and more of the conclusions reached by others. His first articles had, as he later found, been to a considerable extent anticipated.[68] The capital concept of a fund of concrete wealth changes beyond recognition into a valuation or present worth of rights to future incomes. The income concept of a flow of the same goods that compose the flow of wealth is transformed into the at-first-rejected thought of psychic gratifications. The four capital-income ratios shrink in the course of the treatment to one, and that the very one whose character as capital he at first most doubted. Yet he still believes that the whole book is "only the elaboration of the ideas outlined some years ago in the *Economic Journal*.[69] His treatment continues to labor under the incubus of the original erroneous definitions and of the original impossible fourfold hyphenated terminology, compelling us to talk of wealth-capital, property-capital, etc.

These are perhaps but the inevitable penalties of a certain isolation in Fisher's capital theory. He began the analysis and reconstruction of the capital concept as if it were a task apart from the theory of distribution as a whole. Beginning with the *a priori* mathematical concept of stock and flow, he tried to embrace under it all the forms and the whole problem of wealth. A large part of this is prior to, and a necessary condition of, a theory of capital, which is peculiarly the time aspect of value. His study as it has advanced has led to the incidental consideration of difficulties which demanded systematic and fundamental treatment. The capital theory presented has therefore a certain character of intellectual aloofness that leaves it out of touch with the larger theory of distribution of which it should be but one part. Much of what is best in the present work is thus some-

[68] *Economic Journal,* Vol. VII, p. 511, note.

[69] *Nature of Capital and Income,* Preface, p. viii.

what belated, keeping the plane of the discussions of a decade ago and lacking that sense of unity and co-ordination in the theory of distribution which of late has been increasingly felt and expressed.

These criticisms are offered to center attention upon the points most controverted, and to give the perspective in which the work should be viewed. The work as a whole has a marked significance. It puts into convincing form some important disputed conceptions, and it must rank among the memorable contributions made by Americans to economic study.

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